

Letter from Alexander Graham Bell to Gardiner Greene Hubbard, February 15, 1877, with transcript

Boston, Mass. Feb. 15th, 1877. Dear Mr. Hubbard,

Gov. Howard called to-day — to submit a plan for a consolidated company — and wishes to have a meeting with you & Mr. Sanders & Mr. Converse in Washington at once. He wishes me to go also. He states that any day that is convenient for all of us will be so for him. Please appoint some day soon — and have Ponton there also. I can bring Telephones to Washington with me if it is necessary for me to go.

I do wish our plans were settled. I believe that the Telephone even in its present state is perfect enough for immediate use — and why not do something with it now .

I hear privately that Messrs Welch and Anders of Boston are trying to make Telephones for sale — under the impression I suppose — that mine is not ready for use. What shall I do about it?

A letter has just been received signed by the Mayor of Salem and prominent citizens — inviting me to repeat my lecture in Salem.

Invitations to lecture have also been received from the Y.M.C.A. of Providence — and the Literary Assoc. of Lowell — asking terms &c.

I have asked \$200.

Experiments progress. I think we now have a pretty good idea of the effects produced by changes of 2 of the metal diaphragm. Changes of size and thickness produce changes in the quality or timbre of the sounds. We have given names to the extreme qualities that suggest to our minds the peculiar effects observed. The “nasal” quality is observed when

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the plate used is very thick and small, and the “drum-like” quality results from a large and thin plate.

Keeping the size of the plate constant and varying the thickness — we observe that —

A very thin diaphragm (used in the Transmitting Telephone) produces very loud sounds from the Receiver — but the articulation is apt to be indistinct and “drum-like” in quality. As the thickness is increased the drum-like effect becomes less — the articulation becomes more distinct but the loudness of the sounds is diminished. A medium thickness is soon reached where the best effects are produced. Further increase of thickness reduces the loudness of the sounds and occasions the production of the “nasal” quality — the articulation however remaining perfectly intelligible until such a thickness is reached as to reduce the loudness of the sounds so much as to render the articulation unintelligible.

Keeping the thickness constant and varying the size we find that — the larger the plate the louder and more distinct the articulation — and the more “drum-like” the quality. The smaller the plate the softer the sounds — the more distinct the articulation and the more “nasal” the quality.

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The only means of testing the strength of the currents we have as yet devised — is to measure the intensity — by the shock perceived when the current is passed through the tongue. We placed the metal diaphragm against the poles of the magnet and then forcibly removed it — noting the shock produced.

The greater the thickness and size of the diaphragm the greater the shock.

It seems then that in regard to the diaphragm — size gives us loudness and thickness distinctness and power. Hence very large thick plates should give us much better effects than those we have obtained. Mr. Watson has arranged a new apparatus which will be tried tomorrow. The plate is two feet square — and a quarter of an inch thick. I am

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quite anxious to try the effect — and had hoped to have done so today — but the whole arrangement is so heavy that Mr. W. could not carry it — and it is to be forwarded by express tomorrow. I am so anxious to be separated from May (?) that if you wish her to accompany me to Washington (if it is decided that I am to go) — I shall certainly decline to make the journey in the most decided(!) and emphatical manner unless I have permission to leave her behind.

With love to Gertrude and Mrs. Hubbard, Yours truly, A. G. Bell.